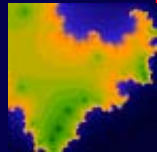
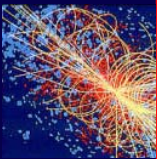


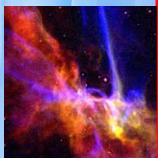
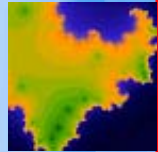
# Land Use and Energy

Presentation to the California Energy Commission's IEPR Committee

September 22, 2006

Jim Parks, Program Manager  
Energy Efficiency and Customer R&D  
Sacramento Municipal Utility District



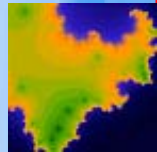
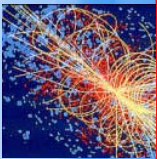


# SMUD Profile

- ◆ Electric utility with a 900 square mile service territory covering Sacramento County
- ◆ Governed by seven member Board of Directors elected by voters
- ◆ Revenues: >\$1.2 Billion
- ◆ 2,000+ employees
- ◆ Summer peak 3300 MW in July 2006

# Underlying Question

- ◆ Can land-use planning activities be used to improve the state's energy systems?

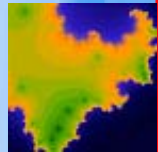


# Land Use / Energy Impacts

- ◆ Peak demand
  - ❖ Now 3,300 MW, up 10% in 2006 due to one heat storm.
  - ❖ Predict 5,000 MW by 2050.
  - ❖ Will need several new power plants/sources by 2050.
- ◆ Approximately 400 hours of peak demand.
- ◆ Solar generation
  - ❖ 10 MW installed over 10 years.
  - ❖ 115 MW needed within next 10 years, to meet SMUD's share of statewide goal.

# Land Use / Energy

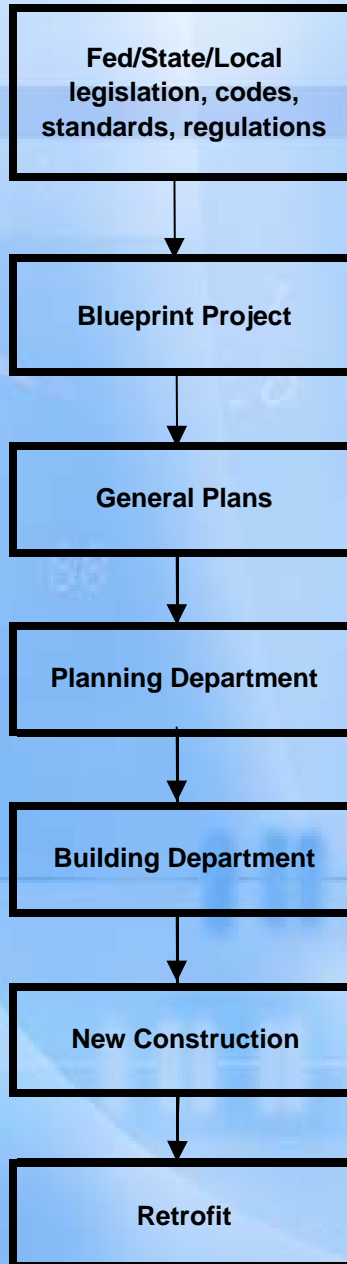
- ◆ Utilities now respond to land use decisions made by cities and counties.
  - ❖ Main utility concern is acreage needed for utility infrastructure.
- ◆ SMUD is working with local agencies to address energy early in the planning process.
  - ❖ Opportunity to identify potential for distributed generation, orientation for solar, incentive programs available for energy efficiency/solar, etc.



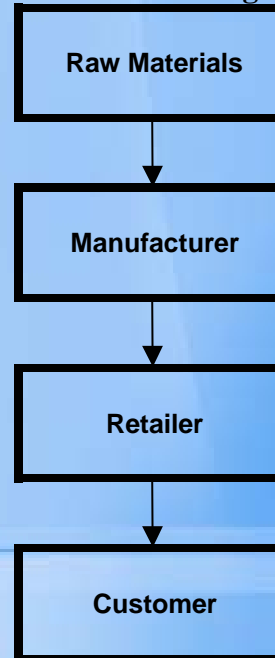


# Opportunities to impact efficiency

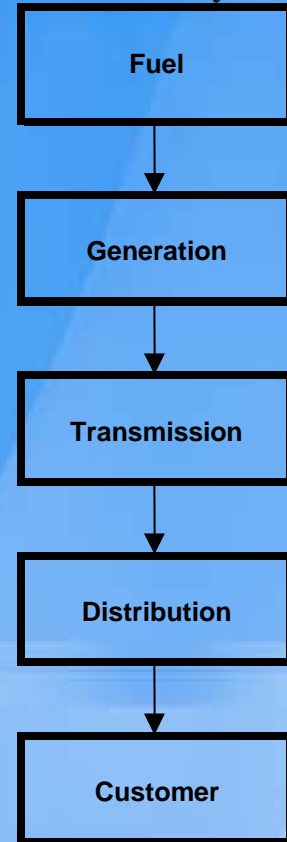
## Construction



## Manufacturing



## Electricity



# Smart Growth Principles

## Transportation Sector

- ❖ Compact/infill development reduces vehicle miles traveled, encourages—
  - Walking
  - Biking
  - Use of public transportation
  - Neighborhood Electric Vehicles
- ❖ Smart growth (e.g., SACOG Blueprint) reduces sprawl.

# Smart Growth Principles

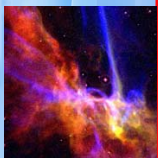
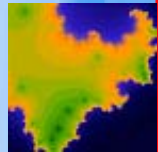
- ◆ Higher density/mixed-use development.
- ◆ Central business hubs close to residences and public transportation.
- ◆ Efficient infill development
- ◆ Taller buildings & more common walls reduce heat transfer & reduce demand.

Note: Could lead to utility's having to upgrade infrastructure and add a substation for new load in older areas unless infill development is super energy-efficient and/or provides some on-site generation.



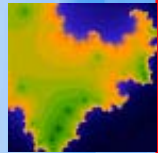
# General Plans

- ◆ *Energy Element* is not mandatory.
- ◆ Local jurisdictions lack resources to prepare *Energy Elements*.
- ◆ Last time Sacramento County adopted an *Energy Element* was in 1979.
- ◆ Currently using *Land Use, Urban Design* and *Housing Elements* to address energy issues.



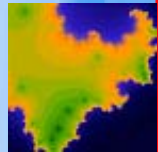
# General Plans

- ◆ Need vision statements, objectives, and policies that address:
  - ❖ energy-efficient design and construction
  - ❖ renewable energy technologies
  - ❖ on-site (distributed) generation
  - ❖ integrated energy planning
  - ❖ combined cooling, heating and power



# Energy in General Plans

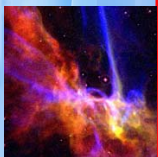
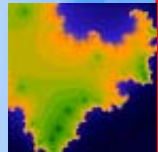
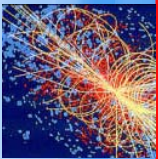
- ◆ Set goal of reducing per capita energy consumption, particularly during periods of peak electricity demand.
- ◆ Encourage orientation of rooflines and windows to optimize use of solar power and minimize heat transfer through windows.



# Energy in General Plans

## ◆ Housing Element

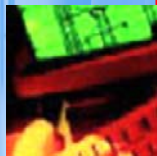
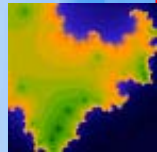
- ❖ Energy-efficient design as a goal
- ❖ Require improvements to meet minimum EE standards upon sale/change or lease of residential property
- ❖ Offer incentives (e.g., density bonus, **expedited process**, fee reduction/waiver) for projects that exceed state's energy efficiency standards



# Energy in General Plans

## ◆ Housing Element

- ❖ Recognize long-term economic and environmental benefits of EE, as weighed against any increased initial costs of EE measures.
- ❖ Increase accountability of landlords to make improvements to meet minimum EE standards upon sale or change of lease.
- ❖ Sponsor a program to promote use of energy efficiency mortgages.

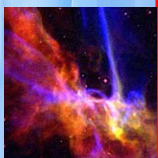
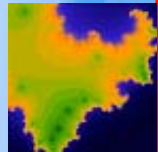
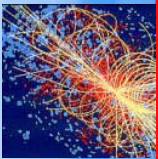




# Energy in General Plans

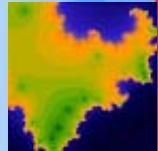
## ◆ Natural Resources Element

- ❖ Establish guidelines to require planting of trees to reduce “heat island” effects, to reduce air conditioning and conserve energy.
- ❖ As a condition of approval, require that a Community Plan, Specific Plan, or development project include a finding that all feasible and cost-effective options for EE and use of renewable energy have been incorporated.



# Collaboration with Stakeholders

- ◆ Community buy-in is key to success
  - ❖ Elected officials
  - ❖ Planning departments
  - ❖ Energy providers
  - ❖ Building industry
  - ❖ Environmental groups
  - ❖ Homeowners/renters/business



# Policy Examples

- ◆ 30% reduction in energy use within 5 years (Palm Desert).
- ◆ Accelerated permitting for green buildings (Chicago).
- ◆ Green building ordinance on buildings over 20k sf (Pleasanton).
- ◆ LEED certification required for public buildings (State).
- ◆ PV requirements in residential new construction.
- ◆ Use green energy to reduce greenhouse gases.
- ◆ Reduced permitting fees for PV and/or energy efficient buildings (PV permit fees range from \$192 to \$823 in the 7 public jurisdictions in Sacramento County.)
- ◆ Accelerated inspections for renewable projects (San Jose).
- ◆ Streamlined process for efficient projects (Roseville).



# AN EXAMPLE— The Railyards Project

240 acres

8,964 homes

1,000 hotel rooms

1,370,000 ft<sup>2</sup> retail

1,478,000 ft<sup>2</sup> office

416,690 ft<sup>2</sup> Historical

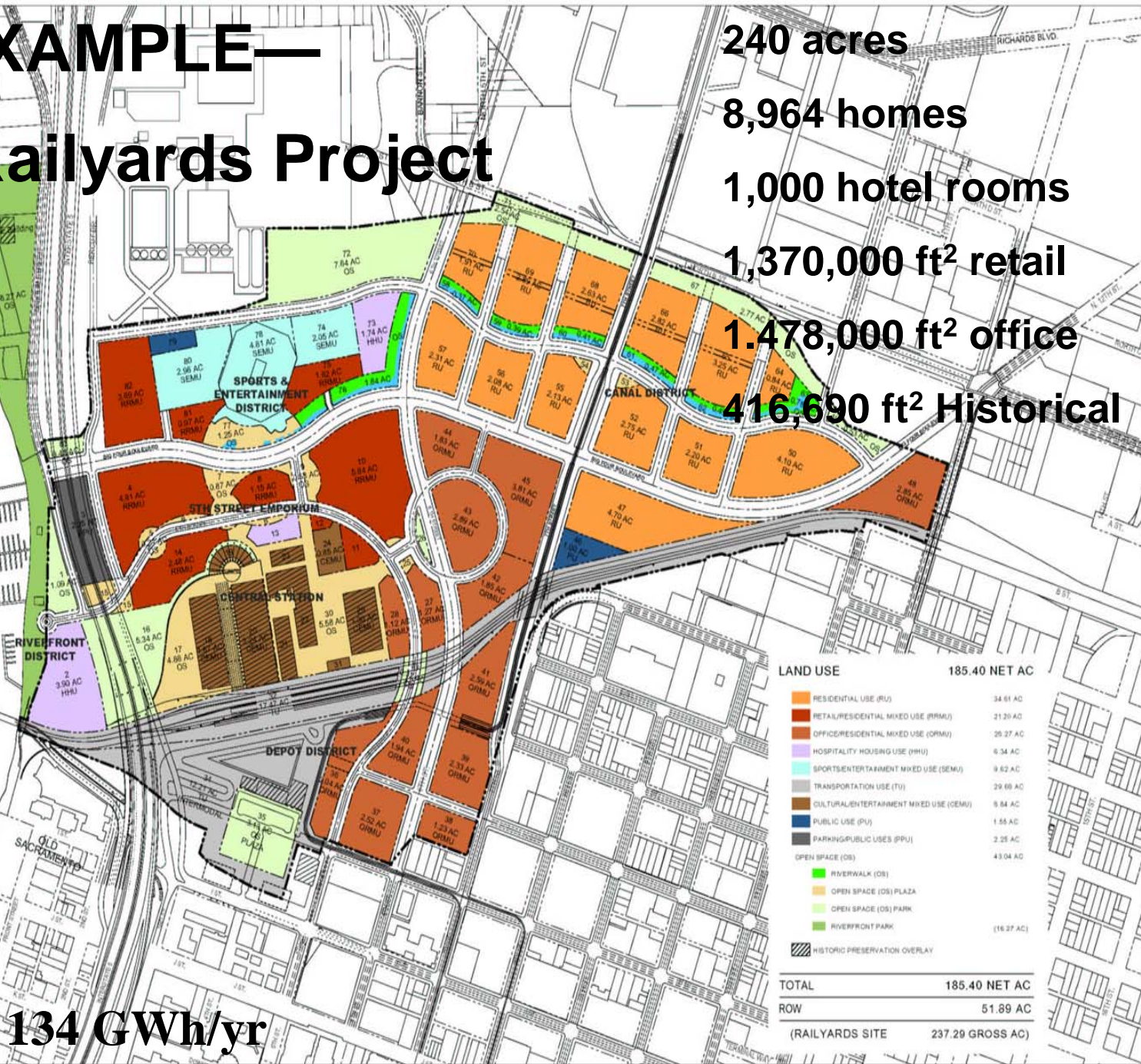
50 MW, 134 GWh/yr

RAILYARDS

THOMAS  
ENTERPRISES  
INC.

JURDE

Architectural Group Design  
300 S. JAVELIN, T.A.L.A.  
910 Orange Grove Road  
Vancouver, California 94601  
(415) 399-1907



LAND USE 185.40 NET AC

RESIDENTIAL USE (RU)	34.61 AC
RETAIL/RESIDENTIAL MIXED USE (RRMU)	21.20 AC
OFFICE/RESIDENTIAL MIXED USE (ORMU)	26.27 AC
HOSPITALITY HOUSING USE (HHU)	6.34 AC
SPORTS/ENTERTAINMENT MIXED USE (SEMU)	9.62 AC
TRANSPORTATION USE (TU)	20.69 AC
CULTURAL/ENTERTAINMENT MIXED USE (CEMU)	9.54 AC
PUBLIC USE (PU)	1.55 AC
PARKING/PUBLIC USES (PPU)	2.25 AC
OPEN SPACE (OS)	43.04 AC
RIVERWALK (OS)	
OPEN SPACE (OS) PLAZA	
OPEN SPACE (OS) PARK	
RIVERFRONT PARK	(16.27 AC)
HISTORIC PRESERVATION OVERLAY	

TOTAL	185.40 NET AC
ROW	51.89 AC
(RAILYARDS SITE)	237.29 GROSS AC

MARCH 7, 2006

LAND USE PLAN

PROJECT NO. 000000

SCALE 1"=40'

THOMAS



# Railyards Project



**Fifth Street Emporium**



**Central Shops**



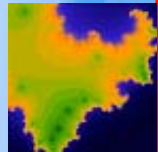
**Waterfront**



# The Task

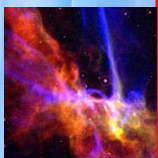
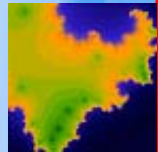
Investigate the potential to—

- ◆ Perform integrated energy master planning.
- ◆ Develop a combined cooling, heating and power (CHP) plant at the Railyards site.
- ◆ Provide chilled and hot water for space cooling and heating.



# Benefits

- ◆ Incorporates smart growth principles and sustainability practices from the start.
- ◆ Progressive and energy efficient means of delivering service.
- ◆ Reduces GHG emissions.
- ◆ Increases system reliability.
- ◆ Can serve as a model for integrating distributed generation, renewables, and energy efficient design.



# Summary

- ◆ The potential to improve energy efficiency and grid reliability through proper land-use planning is BIG.
  - ❖ Incorporate efficiency and renewables in General Plans and Developer Agreements.
  - ❖ Any new requirements should be state-wide for consistency.
- ◆ The earlier energy is addressed in the planning process, the greater the opportunity for cost-effective measures to be incorporated.

